LIBRARY OF
FORDYCE GRINNELL, JR.

NOVEMBER, 1904.

ENTOMOLOGICAL NEWS

Vol. XV. No. 9

Ignotus ænigmaticus Slosson.

EDITOR:
HENRY SKINNER, M. D.
PHILIP P. CALVERT, Ph.D., Associate Editor.

ADVISORY COMMITTEE:

EZRA T. CRESSON. HENRY L. VIERECK. J. A. G. REHN.
PHILIP LAURENT. WILLIAM J. FOX. CHARLES W. JOHNSON.

PHILADELPHIA:
ENTOMOLOGICAL ROOMS OF
THE ACADEMY OF NATURAL SCIENCES,
LOGAN SQUARE.

Entered at the Philadelphia Post-Office as Second-Class Matter.

ENTOMOLOGICAL NEWS

Published monthly, **excepting July and August,** in charge of the Entomological Section of the Academy of Natural Sciences, Philadelphia, and the American Entomological Society.

ANNUAL SUBSCRIPTION, $1.00 IN ADVANCE.

Outside of the United States and Canada, $1.20.

Advertising Rates: 30 cents per square inch, single insertion; a liberal discount on longer insertions. No advertisement taken for less than 60 cents—Cash in advance.

☞ **All remittances should be addressed to ENTOMOLOGICAL NEWS, Academy of Natural Sciences, 19th and Race Streets, Philadelphia, Pa.**

EXOTIC LEPIDOPTERA.

ERNEST SWINHOE,

Cat. No. 13 for 1904 free. 37 Addison Gardens, London W, England

The only dealers' list giving authors' name throughout. As the various species are arranged under their generic names, this list affords an excellent reference for museums and collectors. Explanatory catalogue with over 300 descriptions and many interesting notes, 12 cents.

Fine series, illustrating "Mimicry" and "Seasonal Dimorphism," 100 named specimens, 1st qual., ex. Assam., 40 different species in papers, including *P. bootes, gyas*, etc., mailed free on receipt of Post Office Order, $4.00.

ENTOMOLOGICAL DRAUGHTSMAN.

Biological Drawings a Specialty.

Illustrations Made for Effective and Truthful Reproduction.

P. B. WHELPLEY, Dublin, N. H.

SUPPLEMENT

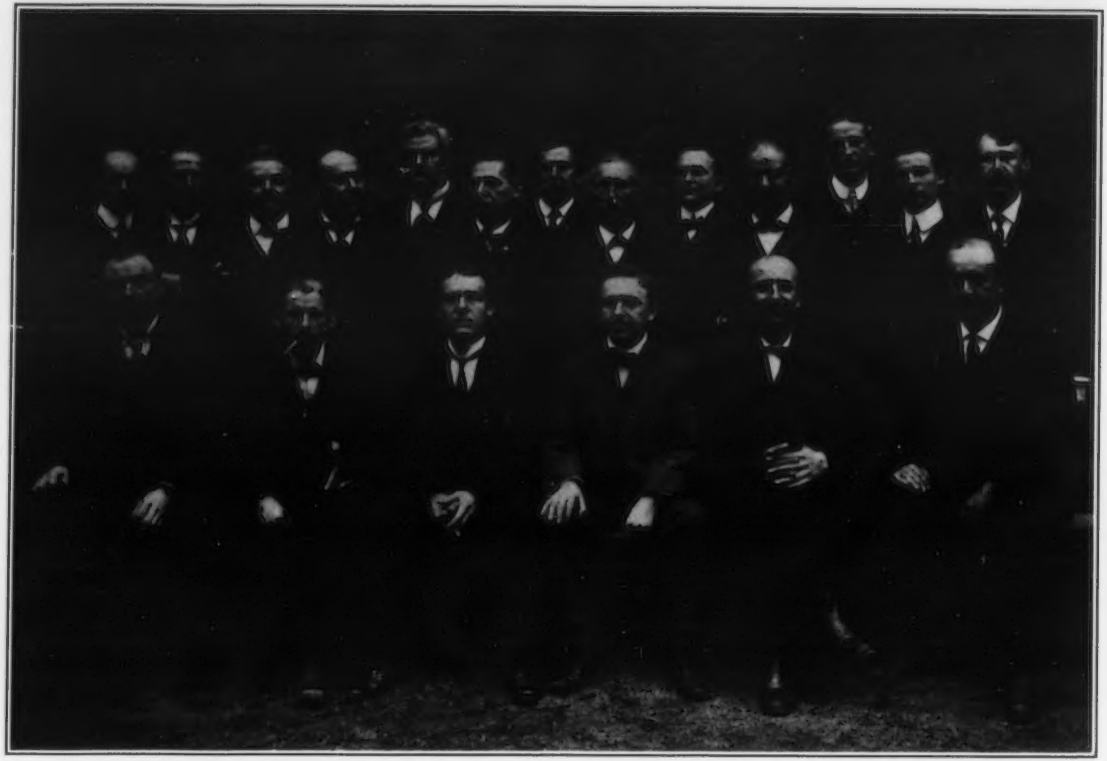
TO

ENTOMOLOGISTS' DIRECTORY

OF MARCH, 1900.

has now been published. It contains Changes in Addresses, Special Study, etc., New Names, with addresses, etc., and other information. A copy will be sent *gratis* to those who have subscribed to the Directory, copies of which can still be had at **50** cents each. Address

E T. CRESSON, Treasurer,
American Entomological Society,
P. O. Box 248, Philadelphia, Pa.



NEWARK ENTOMOLOGICAL SOCIETY.

T. S. MAYFIELD A. J. WEIDT JOHN MARDIN J. ANGELMAN M. SCHLECKSAR E. KRAEMER W. H. BROADWELL
WM. WASMUTH H. WORMSBACHER J. BUNSOW J. DOLL J. B. SMITH A. GROSSBECK
MR. KIRCHER MR. BISCHOFF A. BUCHHOLZ G. J. KELLER G. STORTZ H. H. BREHME

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XV. NOVEMBER, 1904. NO. 9.

CONTENTS:

Moore—Courtship of Mayflies..... 289
Banks—Yellow-fly of Dismal Swamp.. 290
Cockerell—New Genera of Bees..... 292
Daniel—New California Thysanoptera 293
Skinner—A new Thecla from the Northwest 298
Girault—Dysphaga tenuipes Hald.; Brief notes; record of a parasite 299
Kearfott—Notes on the Life History of Polychrysa formosa Grote..... 301
Ashmead—A new Torymid from Utah 302
Adams—Descriptions of new Oscinidæ 303
Editorial 305
Notes and News..... 306
Entomological Literature 312
Doings of Societies 313

Courtship of Mayflies

By R. M. MOORE, M. D.

We usually expect all courting to be done by the male sex so the following observation may be of interest as showing that some of the Ephemeridæ recognize leap year.

One warm damp evening in this June, just as I sat by my study table, close to an open widow, my attention was attracted by the dropping onto the blotter of a female *Bætis propinquus* Walsh; in a moment she was followed by eight males. These alighted fairly near to the female and remained in about the same position as where they landed without showing any special excitement, occasionally waving their bodies from side to side and waving their anal setæ. The female on the contrary showed great excitement, waving her body and waving her setæ almost constantly. She seemed in this way to obtain some sense of direction, and by it to locate the position of the males. As soon as she settled where one was she would back up towards him, stopping a moment to wave her body from side to side and then continue her retrograde movement.

At no time did I see her move towards a male except by backing towards him. The males acted very ungallantly, as when she approached one near enough to touch him with her setæ, he would fly up in the air with a peculiar little hopping flight and land an inch or two away. When one rejected her advances she stood still for a moment and waved from side to side until she got the direction of another and backed towards him, only to have the same thing repeated. Once she flew out of the window alighting on the window-sill; immediately several of the males followed; she stayed on the sill but a minute or two, then flew onto the blotter again, bringing her train of admirers with her. I then captured her and her following. Once again during the evening a female flew into the window followed by four males; they remained for two or three minutes and then flew away. Although the window was open and the gas burning until after midnight, at no time did any of the males come in except they were preceded by a female.

The insects I sent to Mr. Nathan Banks who kindly determined the species for me.

The "Yellow-Fly" of the Dismal Swamp

By Nathan Banks

Several times I have heard those who have travelled in the Dismal Swamp tell of the "yellow fly" which infests that region at certain times of the year. All accounts had put it down as one of the worst biting flies known to the traveller. Specimens, however, were never available, and until lately I supposed it was some local species of *Chrysops*. Recently a friend visited the region and was severely bitten; he obtained specimens, and these, on examination, prove to be *Diachlorus ferrugatus* Fabr., a Tabanid more closely allied to *Tabanus* than to *Chrysops*.

This species has been reported from Mexico, Florida and the Carolinas. The specimens sent me came from the Virginia portion of the swamp, and were taken about the 14th of

July. The fly is mostly yellow, with a brown tip to the abdomen, and the tip of the antennæ likewise brown; the legs are yellow, except the front tibiæ and tarsi, and the apical part of the middle and hind tarsi are blackish. The hind tibiæ are also sometimes black in part. The wings have a faintly yellowish tinge on the base, with a brown stigmal mark, and the apex beyond end of second longitudinal vein blackish. The eyes in death, are green, with blue bands; one near the hind margin, another parallel to it across middle of eye, and giving off a branch forward to the anterior corner of the eye, near the callosity.

According to local statements this fly is supposed to breed in the juniper tree, but probably does in the water. It appears about the first of July and remains about one month, disappearing after a heavy rain near the first of August. They are most vicious at and near twilight, and rarely noticed during the hot part of the day. It is stated that they do not attack horses or cattle, but sometimes assail dogs; the human species, at rest after the day's labor, seems, however, to be their particular hobby. They do not fly far, and houses one half mile away from an infested locality may be exempt from their invasions.

They settle on the hands or face, insert the lancets of their beak, and suck up the blood. If allowed to suck their fill in peace, the spot is not very painful, and does not remain long. But if they are disturbed, as is usually the case, the spot swells, becomes inflamed, and itches fearfully, according to reports. I have seen the red, swollen spots upon the hand of a person twelve days after being bitten. It would seem that when inserting the lancets they inject a small quantity of saliva or some poisonous fluid; that if disturbed, they leave this liquid in the bite to cause trouble; but if allowed to suck their fill most of this fluid or inflammatory matter is sucked out with the blood. This of course is a natural inducement for the host to leave the fly undisturbed, resulting in greater benefit to the fly, and lesser pain to the host.

Much remains to be learned regarding the "Yellow-fly," but its name is now known.

New Genera of Bees.

By T. D. A. Cockerell,

CLADOCERAPIS n. g.

Male with joints of flagellum with processes directed forwards, on upper side, and large branches bearing little filament-like processes, often forked, on under side; area of metathorax smooth and shining, with an obscure transverse ridge; basal nervure meeting transverse medial; first recurrent nervure joining middle of second submaginal cell; second recurrent nervure entering third submaginal cell a short distance from its end. Type *Cladocerapis cladocerus* (*Lamprocolletes cladocerus*, Smith, 1862). Australia. Type of species examined in British Museum.

TRICHOCERAPIS n. g.

Male with antennal joints 10 to 12 reduced to mere threads, ciliate on one side; joint 13 an oval flat dark disc; wings very hairy; malar space large, in the type species black, contrasting with the adjacent yellow mandible.

Type *Trichocerapis mirabilis* (*Tetralonia mirabilis*, Smith, 1865) Brazil. Type of species examined in British Museum. The structure of the antennæ reminds one of *Thaumatosoma*.

HYPANTHIDIUM n. g.

Second recurrent nervure passing well beyond second submarginal cell, as in *Dianthidium*, but no pulvillus; apex of male abdomen bilobed or entire. Type *Hypanthidium flavomarginatum* (*Anthidium flavomarginatum*, Smith, 1879). Brazil. Also includes *H. elegantulum* (Smith), *H. flavopictum* (Smith), and *H. guttatum* (Latr), all hitherto referred to *Anthidium*. I strongly suspect that *flavopictum* is the male of *elegantulum*.

HETERANTHIDIUM n. g.

Second recurrent nervure meeting second transverse cubital, as in *Anthidium*, s. str., but a large pulvillus on feet. End of male abdomen pointed. Type *Heteranthidium dorsale* (*Anthidium dorsale*, Lep. Sm.). Georgia.

New California Thysanoptera.

By S. M. Daniel.

Four species of Thysanoptera have been recorded from California: *Euthrips occidentalis*, *Euthrips tritici*, *Thrips tabaci* and *Heliothrips fasciatus*. To this list I am able to add *Heliothrips hæmorrhoidalis* and the four new species *Criptothrips californicus*, *Euthrips pyri*, *Sericothrips apteris* and *Caliothrips woodworthi*.

Our species may be distinguished by the following synopsis:

Female without ovipostor (Phlœothripidæ). . . . . **Criptothrips.**

Criptothrips californicus nov. sp.

Female.—Length 1.7 mm.; width 0.3 mm.; general color black, dark brown under the microscope.

Head cylindrical, 0.3 mm. long, 0.15 mm. wide, about as wide as prothorax is long. Cheeks almost straight and nearly parallel, set with a few minute spines; surface of head finely cross-striated. Eyes quite large, occupying about three-fifths the width of the head, quite finely faceted and protruding very slightly; ocelli situated far forward, posterior ocelli close to margin of eyes, front one on apex of prolonged vertex of head, color same as that of second antennal segment. Antennæ inserted below vertex, approximate at base, about one and one-half times as long as head, eight-segmented; length of segments: 31, 53, 79, 68, 58, 31, 45, 31. First segment concolorous with head, second base concolorous with first, apex light brown, third and base of fourth and fifth pale yellow, the rest of the antennæ shading to dark brown. Spines and sense cones quite prominent.

Prothorax comparatively small, about one-half length of head. One prominent spine at each posterior angle, anterior marginal and mid-lateral spines wanting. Surface finely cross-striated. Pterothorax approximately as wide as abdomen, nearly cylindrical, narrowing abruptly in front, gradually behind. Wings extending to about the seventh segment, fringe long and wavy. Legs long and slender; fore coxa projecting strongly, fore femora scarcely thickened. Femur, tibia and tarsus bare, with the exception of a number of small spines, more numerous and longer on fore tibia than on the others. Legs concolorous with body.

Abdomen long and slender, cylindrical to about the seventh segment, a little more than twice as wide as head; from this segment tapers gradually to tube. Tube a little more than half the length of head, sides straight, converging slightly, width at middle about one-fourth that of head; four terminal hairs approximately as long as tube, six shorter ones. Spines at sides of abdomen slender, pale, prominent, two on sides of each segment. Segments overlapping considerably; sides of abdomen black, shading to russet-brown at center.

This species is not uncommon at Berkeley and in Southern California, being found on Orange and other trees infected with the black scale (*Saissetia oleæ*). It is found very commonly beneath the old scale, among the eggs, probably feeding on them.

Female with ovipositor down-curved (Thripidæ).
Antennæ with seven segments . . . . . **Thrips.**
Antennæ with eight segments.
Body with markedly reticulate surface . . . . . **Heliothrips.**
Body not reticulate.
Abdomen clothed with fine hairs and having a silky lustre. **Sericothrips.**
Abdomen without such clothing . . . . . **Euthrips.**

Thrips tabaci Lindeman.

Food-plants: onion, cabbage and chrysanthemum.

Hab.—San Francisco and Berkeley.

HELIOTHRIPS.

Antennæ abont twice as long as head . . . . . **hæmorrhoidalis.**

Food-plants: cherry-laurel and laurestina.

Hab.—Berkeley.

Antennæ two and one-half times as long as head . . . . . **fasciatus.**

Food-plants: Orange leaf infested with *Aspidiotus aurantii*.

Hab.—Yuba County.

EUTHRIPS.

Seventh antennal segment about as long as eighth . . . . . **pyri.**
Seventh antennal segment about twice as long as eighth.
Fifth antennal segment about five-sixths as long as fourth.....**occidentalis.**

Food-plants: orange, milkweed and various weeds.

Hab.—Berkeley, Pomona and Lake County.

Fifth antennal segment two-thirds as long as fourth . . . . . **tritici.**

Food-plants: rose, both cultivated and wild, bean, tomato, apple and myrtle.

rkeley, Watsonville, San Francisco and Lake Co.

nov. sp.

ngth 1.26 mm.; width of mesothorax .32 mm.; general n. Head about as long as broad; cheeks convexed; an- ad, acutely angular; back of head transversely wrinkled,

and bearing a few minute spines. Eyes medium, black, with light borders rounded or oval in outline, coarsely faceted, hairy. Ocelli yellow, margined inwardly with reddish brown crescents, widely separated, posterior ones contiguous, with light borders around eyes; one very long slender spine on each side midway between ocelli. Mouth cone pointed, tipped with black; maxillary palpi 3-segmented. Antennæ 8-segmented, approximate, slightly over twice the length of head. Length of segments: 33, 43, 55, 52, 35, 50, 8, 10. Antennæ brown, except segment three which is yellow. Spines pale, conspicuous, special sense organs on segments three and four.

Prothorax longer and wider than head; bears many prominent spines, the one at each anterior angle, and the two at each posterior angle are longest. Color, yellow-brown; faintly cross-striated.

Mesothorax approximately as wide as antennæ are long; front angles obtusely rounded; metanotal plate bears four spines close to front edge, middle pair equal in size and prominence to those at the angles of prothorax, the others are small; pterothorax yellow-brown, transversely wrinkled.

Wings present, extending slightly beyond abdomen, about twelve times as long as wide, pointed at ends; surface of wings thickly covered with minute brown spines; both longitudinal veins and costa of fore-wings thickly set with quite long, brown-colored spines, placed regularly on costa and hind vein; costa has from 29–33 spines, fore-vein 12–15, and hind vein 15–16; veins not prominent; costal fringe of fore wings about twice as long as costal spines.

Legs moderately long, scarcely thickened; femora and all except the terminal part of tibia brown; terminal part and tibiæ and tarsi yellow, a double row of twelve strong spines on the inner side of hind tibia, several inconspicuous spines on fore and middle pairs.

Abdomen about two and one-half times as long as width of mesothorax, cylindrical to eighth segment, then abruptly pointed. Spines on sides and around tip of abdomen dark brown, conspicuous; those on last two segments are long and approximately equal. Color of abdomen dark brown, connective tissue yellow.

Found on pear blossoms, San Leandro.

Sericothrips apteris nov. sp.

Female.—Length 0.745 mm. (0.65–0.84 mm.), width 0.34 mm.. General color very dark brown, nearly black.

Head 0.39 mm. long, 0.289 mm. wide, broadest just under the eyes retracted slightly into prothorax, cheeks convex, converging very slightly posteriorly, anterior margin slightly depressed at the insertion of the antennæ. Spines upon the head inconspicuous, a few small ones upon the cheeks. Head dark brown, nearly black. Eyes moderately large, dark, cornea appears as a light colored margin about the eye; coarsely faceted,

occupying about one-half the width of the head. Ocelli wanting. Mouth cone long, extending to mesothorax, tipped with black; maxillary palpi three segmented. Antennæ eight segmented, bases separated by one-half width of basal segment. Length of segments: 34, 59, 89, 68, 76, 119, 25, 42. Two basal segments broadest. First segment brown, second and third yellow, base and sides shaded with brown, other segments brown, the fourth being a shade lighter. Spines conspicuous, having become specialized as sense organs on segments three to eight.

Prothorax about four-fifths length of head, and twice as broad as long, widest in the middle, tapering abruptly to the head, less abruptly posteriorly. Each anterior angle bears a pair of short, divergently curved spines, one curved spine at each posterior angle. Color dark brown. Meso- and metathorax as long as head, diverging posteriorly, only a little wider than prothorax; color dark brown; surface marked with transverse reticulating wrinkles appearing like striæ in dorsal view. Wings wanting. Legs about same thickness; hind pair somewhat longer than the other two. Femora brown, tibiæ brown, shading into yellow, tarsi yellow, brown at extreme tip.

Spines prominent and numerous on tibiæ, one especially well defined, at the posterior angle of the tibia of the third pair of legs.

Abdomen about one-half as broad as long; black, with silky lustre, a transverse row of twelve dark brown spines, regularly spaced, across segments two to seven. One long spine on the lateral margin of each segment; narrow, dark brown, transverse reticulate wrinkles appearing as striæ on first seven segments. Spines on last two segments comparatively short but strong.

Very common at Berkeley on grass in winter and spring.

Female with ovipositor upcurved (Æolothripidæ) . . . . . **Caliothrips.**

CALIOTHRIPS nov. gen.

Entire surface of insect faintly reticulate and coarsely punctate with the exception of the tibiæ and tarsi. Head slightly wider than long. Ocelli present. Antennæ 9-segmented, the last three being much shorter and closely joined, the third and fourth segments are equal in length and longer than any of the others. Prothorax a little shorter than the head, without large bristles.

Legs long and slender, bearing a stout spine at the base of the posterior tibia, femora unarmed. Wings present, pointed at tip; anterior wings with strong veins consisting of a ring vein and one longitudinal vein, the longitudinal bearing stout spines almost to the tip. Both wings are thickly set with

short hairs. Fringe on posterior margin wavy. Wings white; fore wings with two broad dark cross bands.

Abdomen with posterior margin of segments serrate, these serrations becuming acuminate in the last five.

Caliothrips woodworthi.

Female.—Length 0.91 mm.; width of mesothorax 0.31 mm. General color yellowish brown to brown.

Head slightly wider than long, rectangular in outline; not retracted into prothorax; cheeks nearly straight; surface of head reticulate and closely punctate. Eyes large, black, circular, borders light, coarsely faceted; ocelli of medium size, yellow, and placed quite close together. Mouth cone sharply pointed, maxillary palpi geniculate, 3-segmented. Antennæ 9-segmented, a little over three times as long as head, slender, approximate at the base; length of segments: 19, 35, 49, 49, 39, 32, 14, 11, 18. Segments 1 and 2 cylindrical, light brown in color; second of little greater diameter than first; center of segments 3 and 4 nearly twice the diameter of extremities, brown shading to yellow; segment 5 light at base, apex concolorous with segments six to nine inclusive (dark brown). Sense cones on segments 2 to 6 inclusive with portion beyond middle of segments 3 to 6 bearing sense hairs.

Prothorax about twice as broad as long, a little wider than head, sides slightly arched, no conspicuous spines, but several weak ones. Mesothorax smoothly rounded at the anterior angles. Metathorax slightly narrower than mesothorax and tapering posteriorly. Entire surface of thorax faintly reticulate and coarsely punctate. Wings long, extending beyond tip of abdomen, narrow, pointed at tip; fore wings with strong veins; fringe on posterior margin long and wavy, about four times as long as that on anterior margin; anterior wings with two white bands, one at the base and one just beyond the middle, with a dark brown band between the white ones, and one at the apex of the wing. Hind wings without these areas.

Legs pale yellow, except the middle of the femora and tibiæ, where they are concolorous with thorax. Femora coarsely punctate and faintly reticulate; tibiæ clothed with several small hairs; the under side of the hind tibia bears a row of spines, the last being the longest and stoutest.

Abdomen obtusely conical, twice as long as wide, about the length of the insect, brown, surface faintly reticulate and coarsely punctate. Segments gradually increase up to 4th, then gradually decrease to tip. Segments overlap considerably; serrate, serrations appearing as strong spines on the edges of segments 4 to 8 inclusive. Spines on last 2 segments fine lemon yellow, inconspicuous. Transverse oval areas in the middle of segments 2 to 6, yellowish.

Found on grass in Berkeley.

A New Thecla from the Northwest.

By Henry Skinner

Thecla Johnsoni n. s.p. ♀.—Eyes surrounded by a white ring; palpi brown, clothed with numerous white scales; antennæ annulate, black and white, tip black; body brown; legs annulate, black and white. *Upperside* of primaries reddish brown, slightly darker along the costa, marginal line black, immaculate. Secondaries reddish brown, immaculate; marginal line black; a fine black tail with a white tip and above it an aborted tail with a white tip; between the tail and the anal angle the margin is clothed with long black and white hairs or scales. There are also some white scales at anal angle on inner side of the black marginal line. Underside is the same color as above but differs in having on the primaries a curved line of white spots running from the costa nearly to the inner margin, and curving parallel to the other margin. This line is above an eighth of an inch from the edge of the wing. There is a similar line or row of white spots on the secondaries extending from the costa to the inner margin; the white linear spots are not as contiguous as in the primaries, the fifth from costa beiug quite out of line and the last one is longer than any of the others. Marginal line black with a fine white line on either side; the marginal line ends at anal angle in a dense black spot. There are four small spots between the white line and the margin, upper three black with obsolete centres, and the fourth white and above the anal angle. The male is like the female but smaller and darker in color, being dark brown. It has the usual sexual spot. The expanse of one forewing of the female is 15.3 mm. and that of one forewing of the male is 14 mm.

The female bears a label British Columbia, and I have had the specimen many years and knew nothing about it. The male was sent to me by Professor O. B. Johnson, of Seattle, Washington, with the following remarks: "The larvæ were collected July 15, 1891, by C. V. Piper, one of my pupils, while collecting botanical material. They were found on *Arceuthobium douglassii* Engl. a parasitic plant belonging to the order Loranthaceæ, that is found on our hemlock, *Tsuga mertensiana*. He brought me but three larvæ and enough of the plant to feed them to maturity—one I inflated immediately, one I killed in the pupa state, while the last emerged imperfectly. While alive and feeding the mimicry or resemblance to the plant is most remarkable, not only in coloring which is a yellowish green in the plant and duplicated in the insect, but with dark hastate markings which imitate the shaded portions between the leaf clusters. I have been waiting all

these years for more material but have not been fortunate enough to find any." This species is marked on the underside like *Thecla spinetorum* Boisd. and it is just possible that it may be a color phase of it.

Dysphaga tenuipes Hald.

Brief Notes; Record of a Parasite.

By A. Arsene Girault.

A small branch (½ inch diameter) of a species of oak on the campus of the Virginia Polytechnic Institute at Blacksburg, Va., was found infested with several species of wood-boring *Coleoptera*, which when bred, proved to be the following species*: *Stephanoderes quercus* Hopk, MS.; *Micrasis opacicollis* Lec.; *Anthribus cornutus* Say; *Dysphaga tenuipes* Hald. †

The bare and dead branch, and the conspicuous, fine, impalpable, flour-like, wood-dust on the leaves and ground below the branch were the indications of attack. But a single branch was found infested; this was cut into convenient lengths, and put in a glass jar covered with cheese cloth, and filled with moist earth. This jar was kept in the laboratory, and on the following dates adults of *Dysphaga tenuipes* were excluded: 21, 24 Nov., 1902; 11, 14, 17, 19, 23, 28 February, 1903, those appearing on the latter date (28 February), excluded in the green-house, 14 specimens were obtained, ♂'s, ♀'s.

After remaining in the laboratory from 5 September, 1902, until 25 February, 1903, they were removed to a green-house, where the temperature ranged from 90-100° Fahr., during the day. Here they were supplied with fresh twigs; and here they had plenty of sun-light (got very little, if any, before), and soon became active, flying along the sides of the jar as do moths, making quite a distinct buzzing sound, and resembling small Sesiids on the wing.

After this, a supposed attempt at copulation was observed, but beyond that, no signs of continued breeding were ever

*Letter U. S. Dept., Agr, Div., Ent., 18 Nov. 1902. Webb, J. L., Detr., by Schwarz.

†Letter U. S. Dept., Agr., Div., Ent., 8 Dec., 1902. Hopkins, A. D., Detr., by Schwarz.

indicated, and this species is doubtless very difficult to rear in confinement, dying in a few days of vain efforts to escape.

Adult exclusion was observed on 24 November, 1902. The pupal integument is very thin. The wings are the last to be excluded, and in order to free them, necessarily, the insect has to bend sharply back, so that the dorsal portions of the head approximate the dorso-caudal portions of the abdomen. After exclusion, the body is pale, excepting parts of the head, which are black. The normal colors appear after from two to three days; a short while after emergence, the minute elytra become black-blue, remaining thus for a day or so.

Larva :—Resembles the round-headed borers (e. g. *Saperda*), but is much shorter and assumes a curled position.

Pupa :—Long, straight, and regular in outline; slightly narrowing at thorax (lateral aspect); cerambycid in form; eyes pinkish; tip of abdomen blunt, armed with small bristles, with which the pupa can move about to a limited extent, white. Length, .25 — .313 inches.

When ready to molt, the hands of an artist only could come anywhere near doing justice to its exquisite and delicate beauty, its varying blends of color. The abdomen and ground color of thorax are a strong straw yellow, while the appendages are nicely shaded with blue; eyes large and bright brown; tips of mandible reddish.

The pupa is formed just under a thin expanse of bark, in a small chamber, plugged with a mass of wood fibres.

Parasite :—Parasites appeared from the infested twigs on the 15 February, 1903. They proved to be males of a new *Ptinobius*, and were given the specific name *dysphagae* by Dr. Ashmead, to whom they were sent for determination. I advanced a doubt as to their being *Dysphaga* parasites, after they were named, but as they are much too large to be parasitic on Scolytids, and as the Anthribids had disappeared the previous fall, I think there can be, with reasonable certainty, no doubt of it. Two (2) males were obtained; "the ♀ should have spotted wings." ‡ Type in the United States National Museum.

‡ Letter U. S. N. M., 25 March, 1903, William H. Ashmead.

Notes on the Life History of Polychrysia formosa Gr.

By W. D. Kearfott.

At the Southern end of Greenwood Lake, N. J., May 20, 1901, while digging up some plants of large yellow Ladies' Slipper (probably *Cypripedium hirsutum* Mill.) I in some way disturbed the repose of a singularly shaped larva, which fell to the ground close to my hand ; the nearest plant was a low-growing huckleberry shrub, (probably *Vaccinium nigrum* Wood or *vacillans* Kalm) some of the leaves of which were enclosed in box with the larva, and as it freely ate them, I have no doubt it is the food-plant.

Not appreciating the rarity of the larva, the moth from which was later identified by Professor John B. Smith, I made no detailed description of it, but the following notes may be sufficient for others to recognize it if found :

Shape :—Like a much flattened triangle. The head is small, and each segment to anal end slightly higher than the one before it. The anal segment is three to four times the height of head and segment 2, and it ends in a vertical line, as if cut off with a knife at right angles to the body.

Color :—Pea-green, with whitish wavy dorsal band and whitish wavy circumferential bands around each segment. Length about 25 mm. Head bright green and very small.

About May 27th the larva spun a loose cottony cocoon of white silk and a day or two later pupated, The cocoon was loosely woven, roughly oval, about 25 by 20 mm. and consisting of an outer wrapper rather evenly woven, in which were inserted at about equal intervals a number (about 35) of tiny pure white knots of silk, the inner covering rather loosely woven, and the pupa was clearly visible through both. A fine ♂ moth issued June 14, 1901, the pupa still remaining in the cocoon.

Notes of larva skin :—Head 1.6 mm. wide by 2 mm. long, rounded, slightly bilobed or cleft by paraclypeal suture, lobes rounded, clypeus triangular, apex reaching to within one-third of top. Mandibles dark brown, four indentations making five teeth or points on each. Antennæ short. Setæ on head and

skin pale, very short, not longer than 1 mm. Neither prothoracic nor anal shield chitinous.

Pupa, from empty shell:—Fifteen mm. long to tip of cremaster; 4 mm. wide across thorax by 3 mm. thick. Abdominal segments tapering to a point. General shape slender and elegant. Head and eye-caps make a triangular anterior projection. Cremaster .75 mm. long, armed with two large hooks and four smaller ones.

Color of pupa whitish green, on upper side of thorax and dorsal side of all abdominal segments, except 12 and 13, is a black-brown patch, averaging 2 mm. in width, interrupted by a small clear spot on posterior edge of thorax; the same spots are repeated on first and second abdominal segments and on margin of patch about centre of thorax. On the last abdominal segment is a small dorsal spot of the same black-brown color. The appearance of this patch is, as if the pupa had been held for a moment, dorsum down, in cold-tar or pitch, and in very striking contrast with the nearly white color. Setæ on pupa very minute.

A New Torymid from Utah.

By W. H. ASHMEAD.

Torymus wickhami, new species.

♀.—Length 4-5 mm; ovipositor nearly 4 mm. Head and thorax blue, closely punctate or shagreened, with sometimes a faint greenish tinge in certain lights, and clothed with a fine, short, glittering white pubescence; eyes brown, the malar space distinct; ocelli pale; flagellum black or brown-black, the scape blue with a yellow spot at base; abdomen wholly reddish-yellow, with the sheaths of the ovipositor black; legs with the coxæ and femora blue, the tibiæ and tarsi yellowish, wings hyaline, the veins brown-black.

Type.—No. 8133, U. S. N. M.

Milford, Utah. Described from two specimens taken July 7, 1904, by Professor H. F. Wickham, and in honor of whom this lovely species is named.

ON PAGE 271 of ENT. NEWS for October 1904, there is an error in the Raleigh records of *Chrysops moechus*, our only record for this species at Raleigh is September 3, 1903, but in Mr. Sherman's paper the whole records for *Chrysops niger* at Raleigh are through some slip given for *moechus* also.—C. S. BRIMLEY.

Descriptions of New Oscinidae.

By C. F. Adams.
Zoology Building, University of Chicago, Chicago, Illinois.

In some preliminary studies of the Hough collection of *Diptera*, now in the University of Chicago, I have come across some new forms of *Oscinidæ*, the description of which I take pleasure in presenting here. The one described under the name of *pulla* belongs to the subgenus *Chloropisca*, and is close to my *halteralis* from Arizona. Those under the names of *lasciva*, *rubrivittata*, *annulata*, and *certima* belong to *Chlorops*, sens. str., the last named standing close to *aristalis* Coq., and the others near *pubescens* Loew, and *palpalis* Adams.

Chlorops pulla n. sp.

Head reddish yellow, frontal triangle shining black, punctate on the margins, sides converge gradually, and reach the anterior edge of the front, which slightly overhangs the base of the antennæ; latter black, reddish on lower margins, third joint orbicular, arista dark yellowish; facial ridges tinged with brown, clypeus black, palpi very small, brownish black, proboscis concolorous; upper half of occiput black. Mesonotum very dark reddish brown, shining, with three large and two small black vittæ, of the former the middle one is short, reaching from anterior margin to middle of mesonotum, the other two reaching from the posterior margin nearly to the humeri. the humeri largely shining black; pleura reddish yellow, a large and indistinct spot below and before the base of the wing, and the lower half of the sternopleura black; scutellum same same color as mesonotum; halteres yellow. Abdomen subshining black, tip reddish yellow. Legs shining black, tip of coxæ, and knees reddish, tarsi fuscous. Wings hyaline, veins brown, third and fourth slightly divergent, hind cross vein twice its length from the small cross vein. Length 2.5 mm.

Two specimens. Colorado.

Chlorops lasciva n. sp.

A rather robust species, reddish yellow, abdomen reddish brown centrally. the incisures brown. Third antennal joint, lower angle and lateral margins of triangle, ocellar dot, two triangular vittæ on upper part of occiput, and palpi black. Arista whitish, base yellow; median carina of face rather prominent. Thorax with three shining black vittæ, and a very indistinct strigula above each wing, median vitta reaching two-thirds way to posterior margin and latteral vittæ reaching only three-fourths; pleura, humeri, and scutellum immaculate, metanotum black, halteres light yellow. Second abdominal segment with a black spot in each anterior angle. Legs yellowish, tips of tarsi fuscous. Wings hyaline, third and fourth veins slightly divergent, hind cross vein twice its length from the small cross vein. Length 3.4 mm.

One specimen. Opelousas, La., March.

Chlorops rubrivittata n. sp.

Head yellow, frontal triangle shining, spot in lower angle, and ocellar tubercle black; first two antennal joints yellow, third black, orbicular, arista white, base yellow; face and cheeks light yellow; palpi black, proboscis and clypeus yellow; occiput with two black vittæ above. Thorax yellow, the three vittæ and the two strigulæ on mesonotum reddish; pleura immaculate, halteres and scutellum yellow; metanotum black. Abdomen yellow, a spot on each anterior angle of the second segment, and bases of the following segments black. Legs wholly yellow. Wings hyaline, veins brown, third and fourth veins slightly divergent, hind cross vein twice its length from the small cross vein. Length 3 mm.

Four specimens. Opelousas, La. April.

Chlorops annulata n. sp.

Head yellow, frontal triangle shining, reaching three-fourths way to antennæ, each angle, lateral margins narrowly, and ocellar turbercle black, occiput blackish centrally, with two black lines extending to vertex: first two joints of antennæ yellow, third black, orbicular, arista white, base yellow, palpi rather large, black, proboscis reddish, clypeus yellow, face and cheeks light yellow. Thorax yellow, mesonotum subshining, with the usual three large black vittæ and two strigulæ above base of wings, the central one reaching almost to the scutellum, humeri each with a black dot; pleura with four prominent black spots; scutellum and halteres yellow; metanotum black. Basal half of abdominal segments subopaque black, apical half yellow. Legs yellow, femora and tibiæ each with a black band, tips of tarsi fuscous. Wings hyaline, veins brown, third and fourth veins slightly divergent, hind cross vein nearly twice its length from the small cross vein. Length 3 mm.

One specimen. Opelousas, La. April.

Chlorops certima n. sp.

Head yellow, third antennal joint, a spot in anterior angle of triangle, vertex, occiput except sides and lower part, and clypeus black; face and cheeks whitish yellow, frontal triangle shining, reaching almost to the anterior margin of front; third antennal joint orbicular, arista whitish, base yellow. Thorax yellow; mesonotum with three broad and two short and narrow vittæ, the central one reaching three-fourths distance to posterior margin, humeri without markings; pleura with one black spot; scutellum blackish on sides at base, metanotum black, halteres yellow. Abdomen dull yellow, basal third of second and following segments, and an indistinct spot in center of each, black, the second segment also with a black spot in each anterior angle. Legs yellow, tips of tarsi fuscous. Wings hyaline, third and fourth veins slightly divergent, hind cross vein twice its length from the small cross vein. Length 3 mm.

One specimen. New Bedford, Mass. June.

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., NOVEMBER, 1904.

Some short descriptions of new forms we see in print, leave out entirely even structures used as generic characters in modern restricted genera. The fact that this state of affairs exists warrants more than any other reason, unless it be that of convenience in referring to a species whose exact position in the classification is intended to be conveyed at once, the recent subdivision of the old heterogeneous genera into smaller genera, each based upon some salient structural character. This scheme tends to empty the group characteristics of a species into the generic diagnosis and forces upon the student the recognition of characters too often absent from descriptions. In describing a species an author should test all characters previously employed. This done, he should endeavor to throw more light upon structures not yet used. This seems to be the only way to do work of a creditable character. H. L. V.

I SEE in your September Number an article in reference to the use of felt as a substitute for cork in making double mounts. Now I have stumbled on to a substitute that is cheap, easily procured in almost every part of the country and answers the purpose to perfection. I mean birch-bark; it is the nearest substitute for cork obtainable, it is white and requires no prepration, and will not spoil by keeping.—JOSEPH H. READING.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

THE LEAD-EATING WASP.—Insect which spoiled Telephone Cables in China.—According to the Electrical World, the China and Japan Telephone Company, of Shanghai, China, was much troubled several years ago through the perforation of the lead sheathing of its ærial cables by a number of small holes near every clump of bamboos by which the line passed. These were assumed to be due to small rifle bullets, and a reward was offered for the conviction of anyone molesting the cables. This did not stop the trouble, and it was finally discovered that the holes were made by a species of wasp, which, apparently mistaking the lead (or preferring it) for the bamboo stem in which it normally lays its eggs, bit holes in the insulation and deposited its eggs about the telephone wires. Hemp cloth and linseed oil were substituted for the lead, apparently with satisfactory results.

A FORCEPS NET.—The American Entomological Company's forceps net, catalogue number 123, is an excellent device for capturing different kinds of frail insects, such as small moths and mosquitoes, also stinging insects. The writer has used it for several years and with some practice has attained a degree of skill that will insure the capture of the specimens in perfect condition. When these specimens are to be removed from the net, however, accidents frequently occur that will mutilate the insects so that they are spoiled for the collection. The following modification of the net was, therefore, used this past season with better success. Attach to the gauze, in the center of one of the rings a tin tube from one-half to one inch long, which fits the inside of the neck of the cyanide bottle. Close the end of the tube with a cork or a tin cap. Cut a hole in the gauze inside of the area of attachment so that the specimens can be transferred through the tube. Close the net and fasten securely around the scissor handle at the widest point near the rings, a copper wire which will hold the net securely closed. When the insect is to be captured shift the wire collar back to where the handles cross and it will allow the net freedom in opening and closing. Capture the insect and slide the collar forward to the rings; this will lock the insect into the net and both hands are set at liberty. Remove the cover of the tube, insert it into the neck of the cyanide bottle. and transfer the specimen with safety.

Instead of the tube a tin pepper box of proper size can be used for the purpose. If the tube is not too long it will not handicap the manipulations of the net among twigs. The collar is made of light copper wire wrapped around the handle several times. It will adjust itself to the shape of the handles; it should slide easily but not by itself.—ALBERT F. CONRADI, College Station, Texas.

"PROTECTIVE RESEMBLANCE" IN ARIZONA.—Some years ago an esteemed collector of the earlier day printed a little booklet on the birds of Iowa, which was dubbed by Dr. Elliott Coues "the offspring of a fading memory." A perusal of the recent article by Dr. Kunze (in September NEWS) leads us to wonder whether that gentleman may not have given us an intellectual production deserving, in charity, the same appellation. Referring to the Coleoptera alone, one finds scientific names used which either exist not at all or must be grossly misapplied. What is "*Sphænotica saturnalis*" for instance? Possibly *Sphænothecus suturalis* is meant, but it is a risky guess. Then one who has ever seen *Psiloptera drummondi* may be pardoned for refusing to believe that this insect is "a black Buprestid with an orange stripe across the thorax" while its companion, "*Chrysobothris 8-punctata*" is a total stranger to our lists. We may presume that in the latter case the Doctor meant to refer to *C. octocola*—but we can't be sure. Another name which evidently owes its origin to this article is "*Plusiotis worthii*" which we may assume to be an attempt to write *Plusiotis woodii*. May we be permitted to doubt the occurrence of *Polyphylla variolosa* in southern Arizona, and to think that the Doctor has forgotten the real name, as he says he has done in the case of the red Longhorn that he found with it? So much unnatural history seems out of place in the pages of a journal like the NEWS, which assumes to be a medium for dissemination of science.

Passing over the use of wrong termination in several cases, since this fault does not wholly obscure the application of the names, we should like to say that the protection afforded the large Buprestidæ like *Gyascutus* and *Hippomelas* by their color is not in any way great—they are easily startled and often fly from their resting places long before one is in reach of them, depending upon their swift flight for safety. Their principal enemies are birds and lizards and the harmony between the beetles and their surroundings (they rest chiefly on the smaller twigs where their bulk alone betrays them), is not close enough to deceive such keen-eyed creatures.

In conclusion, disclaiming any personal knowledge of the classification of the Mantidæ, we wish to ask if the Old World *Mantis religiosa* really awaits the approach of other insects on the deserts of Arizona? and to add that the name "*nina de la tierra*" belongs to the fat sand crickets (*Stenopelmatus*) which lurk in holes scooped out under cover of stone or wood and not to the arboreal Mantids which are locally known as "campomoches."—H. F. WICKHAM.

NOTE ON THE CORUCO, HAEMATOSIPHON INODORA. (Duges), [Hemiptera].—Prof. Herbert Osborn, in his invaluable account of "Insects affecting Domestic Animals" (Bull. U. S. Ent. 5, 1896), has discussed the Bedbugs (pp. 157-63). It must be noted, however, that his figure (90) of "*Acanthia inodora*" is incorrect in two important points; the eyes in this species distinctly touch the pronotum, while Osborn makes

them distant; also led astray by an interrupted impressed line, he has inserted an extra abdominal segment. The first visible (really the second) abdominal tergite is actually very long comparatively, and is sufficiently correctly delineated in the "Biol Centr. Amer. Rhynch. Het. II Pl. 20, f. I." This feature of Osborn's drawing puzzled me considerably at first.

Champion also refers (p. 337) to the "late Dr. A. Dugés." I am happy to state that that distinguished naturalist was still in the land of the living as recently as May 19th, and I trust will continue here till many more Mays are past.

It was to be expected that the old idea that references to "bugs," in 16th or 17th Century literature, referred to *Clinocoris lectularius*, would linger in popular entomological books, but it is somewhat surprising to find it repeated by so erudite a worker as Mr. Marlatt and so recently as 1902), (Circ. 47, U. S. Div. Ent.). There can be little doubt that the word "bug" is a corruption of the Welsh "bwg"—pronounced "bog" (with a slight modification of the vowel—it is to-day pronunced "boog" [as in food] over a large area of England)—which simply means "hobgoblin," in fact "bogie!" and that is obviously the significance it always bears in Shakespeare and contemporary writings; f. ex. "the bug which you will fright me with I seek" (Winter's Tale). The Scottish Gaelic is very similar; some dictionaries give "bugbear" as "bocan," which would mean "a little goat," the proper word is "bochdan," which is probably connected with "bochd," meaning poor or miserable. The Scottish Gaelic word for "Bedbug" is "Miol-fhioda," having nothing whatever to do with the above.

As I am doing a little work at the "Bedbugs," I will be grateful for material in all stages (alcoholic preferably) of *hirundinis*, *columbarius* or *pipistrelli*, also *lectularius* from the Southern States.—G. W. KIRKALDY, Honolulu, T. H.

DURING the summer just closed the University of Kansas carried on more work in research and specimen collecting than ever before in its history. In all about 12,000 specimens were added to the museums. Three parties were sent out. One was in Arizona under Dr. H. F. Snow.

Dr. Snow increased his collection of entomological specimens with 10,000 insects, many being very rare and valuable. Within the last three years Dr. Snow has made six expeditions and added more than 85,000 specimens to his collection, which now has a total of more than 175,000 specimens, embracing bugs and insects from all over the world, and especially the United States. This is the largest collection of its kind connected with any institution of learning in the United States. It has taken Dr. Snow since 1876 to collect this number, and since that year he has personally conducted twenty-two expeditions.

Dr. Snow's company last summer was composed of seven members.

Their headquarters were at Oak Creek Canyon, twenty miles southwest of Flagstaff, Arizona, and twenty miles from any railroad. All provisions were carried on pack horses. The walls of the canyon were 1,500 feet high, and at one time Dr. Snow came near losing his life in one of the canyons. He was collecting specimens one afternoon when suddenly an awful roar attracted his attention. Upon turning around Dr. Snow saw a great bank of water coming down the canyon, rumbling and rolling with great logs and brushwood on its crest. He scrambled up the side of the canyon but the flood was so rapid that it was over his feet before higher ground could be reached.

The specimens collected required seventy-eight boxes for shipping and are classified by Dr. Snow as follows: Lepidoptera, 1,400; Coleoptera, 3,000; Hymenoptera, 3,000; Diptera, 1,750; Hemiptera, 400; Neuroptera, 300, and Orthoptera, 150. In addition to these he secured many excellent specimens of rattlesnakes, centipedes and scorpions.

TRYPETA SOLIDAGINIS.—I find that certain authorities state that it is the fly *Trypeta solidaginis* which "escapes from the gall by fretting against the wall which it moistens, its face temporarily swollen into a spongelike mass for that purpose." My own observations, however, have discovered to me the fact that it is the larva, instead of the fly, which provides a passageway to the outer world. Immediately before becoming a pupa, the larva, which at maturity develops a horned process similar to the Cecidomyidæ, by constant friction of this "breast-bone," frets a small tunnel to the surface of the gall, leaving but the merest shell of the epidermis as a protective cap or covering. The larva then retires to the central chamber, leaving in its wake the "sawdust," which is the reduced plant tissues from which has been absorbed all the nutritious substance. This provisionary work, I find, usually occurs during the latter part of February or first week in March.

After the larva's return to the central cell, in a single night, in most instances, it transforms into a pupa, not by casting its skin, but simply undergoes a hardening process, and also changing from the cream-white color of the ordinary larva to a golden brown deepening to shining black at the small end. The fly emerges from this case in May or June, when it shall find the new shoots of solidago sufficiently advanced for gall development.

I base my conclusions upon galls which I have opened sufficiently to be able to observe the larva at its work without disturbing its natural methods. As a further experiment, I also removed several larvæ from their galls and placed them on cotton wool in empty walnut shells covered with bits of glass, where I could better observe their method of operating the chitinous process, which was continued as if in natural surroundings. They also developed into pupæ, from which, in due time, there emerged perfect flies, although almost entirely reared under these foreign conditions.—ALBERTA FIELD, Ashtabula, Ohio.

SPHÆRIDIUM SCARABÆOIDES Linn. in Delaware.—In 1898 I recorded (ENT. NEWS, vol. ix, p. 172) the occurrence in northern New York of this species in large numbers, the first specimens having been taken in 1896. Since then it has been recorded from central New York by the writer and from southern New York (in the Catskill Mts.) by Mr. R. F. Pearsall (ENT. NEWS, vol. xii, pp. 158 and 209). In the minutes of the Newark Ent. Soc. for September 8, 1901 (ENT. NEWS, vol. xii, p. 256), it is recorded from the vicinity of Split Rock Pond, Morris Co., N. J., this being the first record of its occurrence in New Jersey.

The first record of its occurrence in Pennsylvania seems to be that noted by Mr. G. W. Caffrey (ENT. NEWS, vol. xii, p. 296), and the locality given is eastern Pennsylvania, near Bethlehem.

In the NEWS for 1903 I find three references to the occurrence of this species in New Jersey and Pennsylvania. The first of these is in the minutes of the Newark Ent. Soc. for February 8th (p. 97, vol. xiv), where it is recorded from Chester, Morris Co., N. J., and also from Anglesea. The second reference is to be found in the minutes of the Feldman Collecting Social for May 20th (p. 242), where its occurrence at the Philadelphia neck is noted. The third reference is in the minutes of the Newark Ent. Soc. for September 13th (p. 308), but the locality is not given.

On May 6th last, one of my students collected a single specimen of this species here, and on the 14th, while in the field, I made a search for the species and found it in large numbers in its favorite place, fresh cow-droppings.

It seems hardly probable that a beetle of its size could have been overlooked long in a section of country which has been so thoroughly worked over, entomologically, as southern New York, New Jersey and eastern Pennsylvania, and it is to be inferred, therefore, that the species has been rapidly extending its range southward along the Atlantic seaboard within the past few years.—C. O. HOUGHTON, Newark, Del.

MEETING OF THE OFFICIAL ENTOMOLOGISTS OF THE COTTON BELT.—The official entomologists of the cotton belt met at Jackson, Mississippi, on August 2, 1904, to discuss matters related to the State quarantines that are maintained for the purpose of preventing the introduction of the cotton boll weevil into uninfested regions. Those present were Prof. C. E. Chambliss, of South Carolina; Prof. H. A. Morgan, of Louisiana; Mr. Wilmon Newell, of Georgia; Prof. E. D. Sanderson, of Texas; Mr. Reed, representing Prof. G. W. Herrick, of Mississippi, and Messrs. W. D. Hunter and A. W. Morrill, of the Bureau of Entomology, United States Department of Agriculture. Organization was effected with Prof. Chambliss in the Chair.

The object of the meeting being to formulate a plan for bringing about uniform State quarantine laws and regulations, the subject of the methods of dissemination of the cotton boll weevil was recognized as of much im-

portance in this connection, and was discussed at length. It was generally agreed that the greatest danger of transporting the boll weevil from infested to uninfested points lies in the importation of live insects merely to satisfy curiosity or for experimental purposes, the importation of cotton seed for planting from infested districts, and the importation for milling purposes of baled cotton, particularly such as that which was produced late last season in Texas, by thrashing the unopened bolls. Mr. Newell reported having found a boll weevil in examining a hand-full of cotton batting.

Prof. Morgan outlined the plans of the Louisiana Crop Pest Commission for eradicating isolated colonies when this seemed practical, and for delaying the spread of the weevil when eradication was entirely impractical, by assuming complete control of the ginning of the cotton and of the disposition of the seed.

Resolutions were unanimously adopted, the provisions of which, if embodied in the various State quarantine laws and regulations, were believed to furnish ample protection, and at the same time inconvenience shipping interests only in such respects as to maintain the desired protection. These resolutions contain clauses recommending the maintenance of an absolute quarantine against cotton seed, seed cotton, hulls, seed cotton and cotton seed sacks and corn in the shuck from the infested district, and an absolute quarantine against hay and grain, except during the months of July, August and September.

It was voted that in order to facilitate in the future the transaction of business connected with State boll weevil quarantines, a permanent organization be established among the official entomologists of the cotton States. Messrs. Morgan, Herrick and Hunter were made members of the Executive Committee.—A. W. MORRILL, Secretary.

FIRST MOSQUITO—What! Are you trying a black baby?
SECOND MOSQUITO—Yes, I'm in mourning.—*Life.*

A GREEN CITY GIRL'S BLUNDER.—The young daughter of a prominent New York financier, who had passed most of her years either in the city or at the large summer resorts, recently paid her first visit to a real country home. She was anxious to show that she was not altogether ignorant of rural conditions, and when a dish of honey was set before her on the breakfast table she saw her opportunity.

"Ah," she observed, carelessly, "I see you keep a bee."—*Newspaper.*

THE visitor, gushingly.—"What do you do. Analyze insects?"
"Yes."
"Oh, how *dreadful!* Do you find it interesting?"
"Exceedingly."
"Well, *I* enjoy teaching nature in her simplest forms, and believe *everyone* should know a bug from an insect."

Entomological Literature.

BRITISH LEPIDOPTERA: J. W. Tutt, London.

The fourth volume of this monumental work has just been received and fully maintains the exhaustive standard established by its predcessors, and, without touching on the technical completeness of it, I want to particularly bring it to the attention of our American workers in Entomology; every collector of insects, especially Lepidoptera, in the United States and Canada should have in his library at least one volume, if he cannot have all, of this work. The reason for this very positive statement is, that it *tells one what to do*. We have hundreds of careful, observant, some natural born, collectors in this country, the great majority of whom are far removed from Entomological centers, and are, for the most of their time groping in the dark, and wasting opportunities for making original and very important observations, that may never come their way again, because what they see with so little effort seems of little consequence and not worth the trouble of recording, or even if impressed with a particular item of insect economy pass it by, because of the thought that, of course, some one else knows all about it and has published it somewhere.

In Mr. Tutt's work all of the observations of every independent observer are gathered together about each particular species, going into the most minute detail with regard to every phase of its life and habits, points that alone are seemingly unsignificant are being placed side by side with others, and together help to make each other clear, to all of which are added his illuminating summarizations and comprehensive treatment of the whole.

Even a few chapters carefully read in any one of the volumes will forcibly impress on the mind of the collector or student alike the importance and necessity of careful, ceaseless and never satisfied desire to add to the knowledge of his favorite pastime or pursuit, and, most important, he will be made to clearly understand what are the really valuable things to observe, and how and when to look for them. As complete as this work is, Mr. Tutt throughout calls attention to the gaps in our knowledge, probably none of them very difficult to work out, and some of them, no doubt, observed by many collectors, but from carelessness or thoughtlessness never recorded in print, where they would be available to the Systematist; these suggestions alone are enough to awaken the desire to be up and doing and I can confidently say that a copy of this work placed in the hands of every American collector will double the pages in all of our Entomological Magazines in the course of a few years, and do more to promote an abiding interest than any other book that has ever been written on the subject.

W. S. KEARFOTT.

Doings of Societies.

Minutes of meetings of Brooklyn Entomological Society, held at the residence of Mr. Geo. Franck, 1040 DeKalb Ave., Brooklyn, N. Y.

March 5, 1903.—Twenty-one persons present, the President in the chair. Discussion as to the correctness of Dr. T. W. Harris' statement in "Insects Injurious to Vegetation," that the larvæ of *Darapsa myron* bite off the stems of grapes through stupidity or disappointment. Messrs. Doll and Franck had never observed this habit in any of the hundreds of larvæ bred by them. Mr. Pearsall suggested that possibly, as the larvæ approached maturity they required the more substantial nourishment which the woody stems provided. Mr. Weeks had had larvæ which, on failure of supply of fresh leaves, would nibble at the stems or even gnaw unripe grapes, and suggested that it was due to an intelligent purpose, as the stimulation of the growth of the vine and foliage by the pruning of the fruit. Professor Smith cited Professor Lintner's statement that the larvæ of *N. leucostigma* had been observed, at Albany, N. Y., gnawing off tender stems bearing leaf clusters. This was not a common practice, and there was no explanation of the cause. Dr. Zabriskie and Prof. Smith had each observed a larva, possibly a Rhynchophorid, boring in the petioles of maple leaves, with the result that they fell prematurely.

Prof. Smith further stated that in his investigations into the life history of certain mosquitoes he had found the eggs hatching and larvæ active in water covered with ice, and that few persons realized how active insects were during the winter months, many rare species being available for capture early in that season.

April 2, 1903.—Twenty-one persons present, the Vice-President in the chair. Mr. J. R. de la Torre Bueno was elected member.

Mr. Weeks read a paper upon "Theory of the Origin and Evolution Productive of the Brilliant colored Bands upon the Secondaries of Moths of the genus *Catocala*," in which the

bands first originated as a means of protective resemblance and performed the same office as the striped primaries of many arctians by counterfeiting the alternate lights and shadows of plant stems or masses of dead vegetation. In the course of natural development these bands became too prominent to be longer available for concealment and thereupon served in a directly contrary capacity, viz., to attract the attention of an enemy and thus divert attack from the lesss showy but more vital parts. In the course of natural selection moths possessing the brightest hued secondaries would survive and thus the character would be still further encouraged and improved. The practice of the members of this genus of boldly exposing the secondaries at night, while engaged in feeding, would seem to substantiate this theory. Whenever a formation, coloration, or maculation rendered the owner conspicuous for the purpose of directing attack it might be classed as active or aggressive, but where such characteristics served merely for concealment they might be termed passive or negative.

Discussion by the Society. Mr. Doll remembered seeing a *Catocala* in which the primaries were tinged with the red hue of the secondaries, and Mr. Franck another in which the secondaries were black or red according to the direction of view.

May 7, 1903.—Eighteen persons present, Mr. Richard F. Pearsall in the chair. Mr. Hulst Mead was elected a member.

Dr. Call lectured upon the "Geological Preservation of Insects and the March of Insect Life upon the Earth." Insects undoubtedly originated from the crustaceans. The indestructability, under favorable conditions, of chitin, of which insects as well as crustaceans are largely composed, had tended to preserve forms which existed probably millions of years ago, and these were now found in the Swedish rocks of the Cambrian Age and in the Lower Silurian in this country. In addition perfect insects were often found imbedded in amber.

Dr. Call exhibited specimens of amber containing among others a fly, wasp, spider, and cockroach. Their presence was explainable on the theory that having come in contact with the sticky surface of this material while fresh they had

been unable to extricate themselves and were afterwards completely submerged by additional exudations.

June 4, 1903.—Sixteen persons present, Mr. Richard F. Pearsall in the chair.

Mr. W. W. Hoover, Economic Entomologist, of Prospect Park, Brooklyn, was elected a member.

Mr. Franck read a letter from Mr. Carl Schaeffer descriptive of the experiences in collecting of Mr. Doll and himself at Brownsville, Texas.

Mr. Wasmuth exhibited some fine variations of *Pachnobia manifesta*, *Arctia rectilinea*, *Arctia arge* (the latter extremely suffused secondaries) and some nearly natural larvæ of *Attacus calleta*, bred by himself from the egg.

Mr. Franck presented a series of *Hepialus* comprising specimens greatly varying in size of what had heretofore been identified as several distinct species, but which evidently constituted but one. Also some specimens of *Cychrus tuberculatus* from British Columbia.

The October meeting of the Newark Entomological Society was held on the 9th at 3 P.M., with President Keller in the chair and 21 members present. Visitors were: Messrs. Franck, Engelhard, Martin, Wasmuth and Landrack, all of the Brooklyn Society.

The congratulations of the members were extended to Prof. Smith for having received the first prize at the St. Louis Exposition for his collection of mosquitos.

Messrs. William Reinecker, of Jersey City, and William Wasmuth, of Brooklyn, were proposed and unanimously elected to membership.

Mr. Broadwell took several pictures of the assemblage.*

After that a supper was served in the Turn Hall's large meeting room to which thirty-one sat down; the music for the first part of the evening was furnished by Prof. Weidt and five of his friends, and by Prof. Wormsbacher the rest of the evening. Toasts were proposed for the Newark Entomological Society, the Brooklyn Society, etc.

---

* See Plate XVIII.

Professor Smith made the speech of the evening on "Our Twentieth Birthday," in which he gave the history of the Society in every particular, referring to Messrs. Simon Seib, the Society's first President and Julius Bunsow, its first Secretary, both of them members to this day; he also spoke of the Society's ups and downs and the good standing of it at the present time with thirty and some odd members, most of them active, enthusiastic collectors, and new ones added at nearly every meeting.

Mr. Engelhard gave a very interesting account of his and Mr. Doll's collecting trips to Utah last summer.

Other speeches, recitals and songs were brought up and an all around good humor prevailed until the termination at 11 P. M.

OTTO BUCHHOLZ, *Secretary*.

A meeting of the Entomological Section of the Academy of Natural Sciences of Philadelphia was held September 22d. Mr. Philip Laurent, Director, presided. Nineteen persons were present. Mr. Laurent presented a blown larva of *Eacles imperialis* and Mr. H. W. Wenzel two specimens of *Hydrobius tessellatus*. The latter were taken at Atco, N. J. IX. 11.04.

Mr. J. Chester Bradley spoke on the position in the classification of the Hymeroptera of certain anomalous genera. The position of the genus *Ropronia* was set forth in detail, and its comparative anatomy explained by blackboard diagrams.

Dr. Calvert exhibited a number of wheat grains numerously infested with *Calandra oryzæ;* also specimens of *Cordulegaster maculatus*, *C. diastatops* and *Libellula quadrimaculata*, from Poyntelle, Wayne County, Penna., June, 1904, being the first records of those species in Eastern Pennsylvania. The two cordulegasters were taken along the same brook, *C. diastatops* in the open meadow, *C. maculatus* in the woods; a correlation between the different amounts of light in the two localities and the size of the eyes (larger in *maculatus*) was suggested. The ♀ *C. diastatops* was observed to make the same motions of oviposition as seen in the Libellulinæ and Gomphinæ, by striking the water of the brook repeatedly with

the tip of the abdomen; the eggs, however, were not seen. The speaker had, near the above-mentioned locality, on June 30, 1904, observed at short range, but not taken, a single individual of what was in all probability the tropical *Anax longipes*.

Mr. E. Daecke spoke of the comparative rarity of *Somatochlora provocans* previous to the present year when he had seen the species in some abundance. He took *Hetærina americana* at Bamber, N. J.; also *Cirrhophanus triangulifer*, a Noctuid, at Fort Lee, N. J.; *Neonympha areolatus* at Tom's River and Brownsville Junction, N. J., June 27th and July 12th; *Hagenius brevistylus* on the Great Egg Harbor River.

Mr. Ilg exhibited some interesting blown larvæ of Lepidoptera.

Mr. Rehn exhibited a *Conocephalus* taken in the Philadelphia Neck. It was collected by Mr. Wenzel, who thought it the species *atlanticus*, but it proved to be *palustris*. Another species was shown, taken at Tinicum on September 9th. It was described by Blatchley under the name *C. bruneri*.

Mr. Wenzel presented the specimen of *palustris* and said it was taken September 21st.

Mr. Bradley exhibited an Evaniid taken by Mr. Stone in the city limits. It is an undescribed species.

Mr. Greene said he and Mr. H. A. Wenzel had captured a number of *Adrane coecus* at Lehigh Gap, Penna. Mr. H. W. Wenzel said he would report later on his recent catch of water beetles and exhibit the specimens. He found many pupæ at the seashore buried in the dry sand apparently awaiting a rain before emerging. Mr. Laurent said he had two Pennsylvania specimens of *Cirrhophanus triangulifer*. Mr. E. T. Cresson, Jr., was elected an associate of the Section.

HENRY SKINNER,
Secretary.

At the meeting of the Feldman Collecting Social held on September 21 at the residence of Mr. H. W. Wenzel, 1523 South Thirteenth Street, Philadelphia, twelve persons were present.

Mr. Harbeck reported *Cicindela lepida* at Clementon, N. J., July 4th.

Mr. Boerner recorded *Hydrophorus spurius* at Neshaminy Falls, Pa., July 3d ; also *Psephenus lecontei* at same place and date.

Mr. Daecke exhibited *Aedes smithii*, which was found commonly in pitcher-plants at Tuckerton, N. J. He also showed specimens of other orders of insects, including the gall of *Eurosta solidaginis* from which he had reared the flies.

Mr. Wenzel showed specimens of *Hydrocanthus puncticollis* from Cape May Court House, and *Hydrobius tessellatus*, from Atco, N. J., both rare species and new to the State. Also a season's collecting of Haliplidæ from New Jersey and Pennsylvania representing all the local species. *Pterostichus mœstus* as shown by a series from Lehigh Gap, Penna., is unusually large and probably represents a local race. Mr. Daecke reported the capture of *Cicindela rugifrons* and *Donacia floridæ* at Bamber, N. J., September 9.

Mr. Haimbach reported that he had taken between 300 and 400 species of micro-lepidoptera on Five Mile Beach, N. J., during the past summer.

Mr. Haimbach invited the Social to meet at his home in October.

Mr. Wenzel recounted some collecting experiences during the past season. Many water-beetles in the pupae and immature imago stages were found abundantly around the roots of grass tufts in situations which had previously been covered by water but were then almost dry.

WILLIAM J. FOX,
Secretary.

Minutes of meetings of Brooklyn Entomological Society, held at the residence of Mr. George Franck, 1040 DeKalb Ave., Brooklyn, N. Y.

October 1, 1903.—Seventeen persons present, the President in the chair. Prof. Smith mentioned the occurrence in great numbers, at New Brunswick, N. J., of a species of May fly

during a moist warm evening in mid-summer. The swarm consisted almost entirely of ♀ ♀, and next morning the ground was covered with the dead insects which had extruded the contents of their ovaries. The abdomen had two vaginal openings and a large egg mass had been extruded through each. Each mass contained by estimation some 5-6000 eggs.

Mr. Franck stated that at Altoona, Penna., similar insects occurred in such numbers as to form a layer many inches in depth and prevented the running of railroad trains.

Mr. Schaeffer found these flies so numerous at night at Brownsville as to exclude other insects from the lights.

Messrs. Doll and Schaeffer spoke of the rapid succession of insect broods noticed by them in Texas. Although there were comparatively few species of Lepidoptera a new generation appeared each month.

Professor Smith mentioned an experience with mosquitoes at Atlantic City, N. J. While occupying a room on an upper hotel floor he observed that no mosquitoes entered through the open windows, but did enter through the transom when that was left open. He also found the insects on a cafe ceiling below, in large numbers. On investigation he discovered that the hotel was constructed on piles, and that beneath the building was a pool in which the mosquitoes bred and flew upward through the elevator shaft. He had also found mosquito larvæ numerous in sewage drains in Central Park.

The death of Mr. A. Radcliffe Grote having been announced, Mr. Graef and Dr. Call were appointed a committee to prepare suitable resolutions thereupon.

November 5, 1903.—Twenty-three persons present, the President in the chair. Messrs. Engelhardt and Call were appointed a committee to prepare a suitable acknowledgement to Mrs. Franck for her share in the entertainment of the Society.

Dr. Zabriskie exhibited a hinged double case of his own invention for the preservation and exhibition of galls. One lid was slightly rabbeted in the other and kept closed by two hooks, the label pasted on the back is cut in two to facilitate the opening of the case. Six cards were laid in each side filling the entire surface with the exception of a half-inch space

running through the center in which was fitted a retaining bar with rabbeted edges lapping over the interior edges of the cards and holding them in place while the bar itself was adjusted and fastened by fitting one end in a slot and the other end by a thumb-spring which permitted the bar to pass below it and then resumed its normal position. The outer and exterior edges of the cards were inserted and held in place under a thin strip on cleat tacked along the sides at a sufficient distance from the bottom of the case to permit the ready insertion of the cards.

The specimens were glued upon cards upon which any descriptive notes could be written. The boxes exhibited were about 9 inches square by 2½ inches deep and specimens of nearly the aggregate depth of the top and bottom could be accommodated by placing them opposite smaller ones.

Mr. Weeks read a communication which appeared in the New York *Evening Telegram* of September 4, 1903, entitled "At Last a Caterpillar for the Ailanthus Tree," by which it appeared that the writer had for the first time recently seen the larvæ of *Philosamia cynthia* in New York City, and Mr. Week's reply thereto narrating the introduction of the moth in this locality many years ago through the agency of the late John Akhurst of Brooklyn.

December 3, 1903.—Seventeen persons present, the President in the chair. Mr. Engelhardt read an account of his trip through the southern part of Virginia during August with a single companion. Starting at Norfolk he visited Richmond, the Natural Bridge, the Peaks of Otter and Apple Orchard Mountains in the Blue Ridge, returning to Norfolk from Bedford City by train. Although collecting was not the object of his trip, he, nevertheless, secured many specimens embracing all orders, some of which he exhibited and which proved of much interest as showing to what extent the insect faunas of New York, New Jersey and Virginia were identical. More than two-thirds of the species are recorded within fifty miles of New York City, in varying degrees of rarity.

ARCHIBALD C. WEEKS,
Secretary.

EXCHANGES.

Not Exceeding Three Lines Free to Subscribers.

☞ These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and only when necessary those at the top (being longest in) are discontinued.

Lepidoptera. I have a few *luna* cocoons to exchange for *ceanothi* or pupæ of *Papilios* not found in this locality.—Miss Kate W. Strong, Setauket, Long Island, New York.

I have a few live pupæ of *Deidamia inscriptum* to exchange. I wish live pupæ of *Darapsa versicolor* and *Calasymbolus astylus*.—R. R. Rowley, Louisiana, Mo.

Megachilidae of the Americas wanted for study. Will exchange or purchase.—E. S. G. Titus, Div. Entom. Dept. Agric., Washington, D. C.

Wanted.—Copies of ENT. NEWS for January, 1903, Vol. xiv, No. 1.—Henry Skinner, 1900 Race St., Philadelphia, Penna

Lepidoptera.—*Papilio gundlachianus* for exchange.—Captain Wirt Robinson, Fort Caswell, North Carolina.

Wanted for Cash—Living cocoons or pupæ of Lepidoptera of U. S. A. W. T. Page, 6 Rylett Crescent, Shepherd's Bush, London, W., England.

Lepidoptera to exchange for specimens not yet in my collection. Send lists to Adolph Fischer, 502 School Street, Chicago, Ill.

Exchange.—Coleoptera in papers, with data. Will collect in this locality this season. Send lists.—Rev. J. C. Warren, Argentine, Kans.

Have for exchange.—Named species of Coleoptera, named and unnamed species Lepidoptera, Hymenoptera, Diptera, Neuroptera and Odonata of this locality, for named species of U. S. and Canada.—A.W. Andrews, 180 Helen Ave., Detroit, Mich.

Wanted.—Material for the study of the hybrid or polymorphic butterflies of the genus *Basilarchia*, including larvæ or pupæ of *arthemis* or *astyanax*, imagos of *proserpina* or *arthechippus*, or any specimens showing unusual characters. Liberal exchange. Specimens retained will be deposited in Museum of Comparative Zoology.—W. L. W. Field, Milton, Mass.

Fertile ova of *Attacus yama-mai*, *Rhodia fugax*, *Calligula japonica* and *cecropia-ceanothi* hybrids for good exchange; will give cash or exchange for pupæ of *angulifera* and *ova* of *H. nevadensis*.—Jas. Mitchell, 212 Indiana Trust Building, Indianapolis, Indiana

Cicindela wanted (Henshaw Numbers 19 to 32b inclusive), Coleoptera for exchange. Will collect in all Orders. Write before collecting.—V. E. Shelford, Zoology Building, Univ. of Chicago, Chicago, Ill.

Wanted—Insect galls and host plants for the study of distribution. Will exchange specimens.—Mel T. Cook, Greencastle, Ind.

Butterflies.—Will collect in this vicinity the coming season in exchange for named specimens in papers or expanded, found in other localities.—C. E. Montgomery, 10 Cabot St, Portsmouth, N. H.

I have *Triptogon occidentalis, modesta, Sphinx chersis, Amp. versicolor, Calocala relicta* var. *bianca, phalanga, lacrymosa, frederici* and pupæ of *P. astylus* in exchange for others of same genus or for small white roses.—Chas. F. Timm, 131 Ralph St., Brooklyn, N. Y.

Orthoptera.—Determined Colorado species to exchange for species not represented in the Collection here. C. P. Gillete, Ft. Collins, Colo.

Wanted.—*Papilios* of the world. Must be perfect. Send list and state what you wish in exchange. C. F. Groth, 141 E. 40th St., New York.

Wanted.—Fertile eggs of *Citheronia regalis* and *Basilana imperialis*. Will pay cash for twenty-four of each.—Phineas Whiting, 106 Fairmount St., Lowell, Mass.

Wanted in southern and western United States correspondents who will collect *Cicindela* in exchange for named Coleoptera of Mexico, South and Central America, Europe and Australia. Write at once. Zoological Museum, 37 Zoological Building. University of Chicago, Chicago.

Insects of all orders, chiefly from Kansas, Colorado, New Mexico and Arizona, for North Amercan species not in my collection. List of duplicates and desiderata on application. F. H. Snow, Lawrence, Kansas. (Prof. Systematic Entomology in the University of Kansas.)

Wanted, to complete files: Illinois State Laboratory Natural History, Bulletin, Vol. i, Nos. 3 and 4; Vol. iv, articles, 9, 14 and 15; Vol. v, articles 1 and 6. Many valuable exchanges to offer in different groups and subjects. James G. Needham, Lake Forest, Ill.

Wanted, for cash or exchange.—Fitch's 4th Report on Insects of New York; Smith's Reports on New Jersey Insects for 1889 and 1892; Bulletins 9 and 33 (old series), Parts iv and vi, Bibliography of Economic Entomology, Div. of Ent, U. S. Dept. Agr.; 15th, 16th, 18th and 19th Reports on Illinois Insects.—W. E. Britton, Agr. Exp. Sta., New Haven, Conn.

Wanted to exchange Lepidoptera. Write before sending list.—D. F. Berrenger, Fostoria, Ohio.

A few examples of *Microcyptus testaceus* Lec. for exchange. Desire Cleridæ and Cerambycidæ.—L. H. Joutel, 164 E. 117 St., N. Y. City.

Lepidoptera.—I have a large number of duplicates for exchange. Also pupæ, including *Triptogon modesta*, and other *sphinges*. Address Frank H. Engl, 1048 Byron St., Chicago, Ill.

I have a German correspondent anxious to exchange perfectly prepared and named European insects in all families, and orders for American insects. Address and introduction supplied. W. D. Kearfott, 114 Liberty St., New York.

Callosamia calleta cocoons to exchange—*Sphinx* pupæ desired.—W. T. Buxton, 17 Walter St., Somerville, Mass.

Wanted all kinds of native pupæ and cocoons, take also rare plants in exchange for exotic and native butterflies. Chas. F. Timm, 131 Ralph St., Brooklyn, N. Y.

Lepidoptera, duplicates. Fine tropical diurnals from Gilolo, Borneo, Jamaica, Brazil, Peru, W. Africa, Cuba, offered. Wanted desiderata from Haiti, P. Rico, Phillippines, Ecuador, Bolivia, Amazon River, etc. Walter Dannatt, 75 Vanburgh Park, London, England.

Lepidoptera.—I have 250 *Luna* cocoons to exchange for others or for exotic butterflies in paper.—M. Reyher, 1601 Willington Street, Philadelphia, Pa.

Cocoons. of *Callosamia cynthia* to exchange for other cocoons of North American moths.—Miss E. Avery, McPherson Library, Indiana Avenue and F. Street, Philadelphia, Penna.

Hemiptera and Hymenoptera from all regions of the earth, mounted or unmounted named or unnamed. Will give for these named and mounted material in other Orders from Southwestern United States, Nicaragua and Cuba.—C. F. Baker, Estacion Agronomica, Santiago de las Vegas, Cuba.

Lepidoptera.—Pupæ and cocoons of native Papilios, Sphingidæ and Saturnidæ wanted in exchange for pupæ of *Pap. ajax*, Cresphontes, *Cith. regalis*, *Anisota rubicunda*, *senatoria*, *stigma* and hybernating larvæ of *Apatura*, *celtis and clyton*.—Earnest Jeheber, 118 Reservoir Street, Lancaster, Pa.

FOR SALE CHEAP

for cash—collection of Coleoptera, Diptera, Hymenoptera and Hemiptera. 5000 species, 25,000 specimens contained in 250 Schmitt and other boxes. All in first-class condition. Determinations by best Amer. and Europ. specialists

WM. A. NASON, ALGONQUIN, ILLINOIS.

BOOKS

My new Catalogue No. 19 (General Zoology) is especially rich in Entomological Literature. Sent free.

WILLIAM J. GERHARD, 2209 Callowhill St, Phila, Pa., U. S. A.

BUTTERFLIES AND MOTHS WORTH $1.000

My beautiful collection of Lepidoptera representing seven years of patient collecting and purchases in the U. S. and foreign lands offered for $275 **CASH.**

SUITABLE FOR MUSEUM, SCHOOL OR PRIVATE EXHIBITION

956 U. S. diurnals, many rare forms of which 752 are classified after Smith's check list; 1080 nocturnals, all orders, many rare and unamed; 464 Lepidoptera from India, Africa, South America, Australia, **very fine;** 700 in papers, U. S. and foreign, to be mounted. Total, 3200.

For full information, address

HENRY W. EUSTIS

N. W. CONSERVATORY OF MUSIC, MINNEAPOLIS, MINN.

O. FULDA,
STAPLETON, N. Y.

Specimens, Mounts, Entomological Supplies for sale. Lists on application. State your specialty.

Showroom, 816 Broadway, New York City.

When visiting New York please call.

FOR SALE

A collection of Coleoptera, consisting of 5700 named species and varieties. About 5000 specimens in excellent condition, all from America North of Mexico. Especially rich in aquatic species, with many undescribed forms. All the larger families well represented. Upwards of 300 tight boxes, 240 of which are of Schmitt's make, two oak cabinets that hold 189 Schmitt boxes and numerous duplicates go with the collection. No reservations.

CHRIS. H. ROBERTS, 10 WASHINGTON PLACE N. Y. CITY.

When Writing Please Mention "Entomological News."

THE NEW IMPROVED METAL CASES

FOR SCHMITT INSECT BOXES.

This great improvement is now manufactured and ready for sale. These cases are no doubt the best medium for preserving insect collections. Dr. Henry Skinner, the originator of the style and design of the case, recommends them highly, and the judgment of so experienced an entomologist goes far to guarantee satisfaction. Standard cases contain 28 shelves and will hold 28 No. 2 or No. 3 Schmitt boxes. Price, $12 complete.

CASES CAN BE MADE IN SPECIAL SIZES TO ORDER.

AMERICAN ENTOMOLOGICAL COMPANY

1040 DE KALB AVE., BROOKLYN, NEW YORK

THE KNY-SCHEERER CO.

DEPARTMERT OF NATURAL SCIENCE.

G. LAGAI, Ph.D.

225-233 FOURTH AVE. - - NEW YORK, N. Y.

ENTOMOLOGICAL SPECIMENS.

North American and Exotic Insects at Reduced Prices.
School Collections.
Metamorphoses.
Biological Models.
Wall Charts.
Write for Special Quotations

Saturnia anona Ottol.
(Arizona)
♂ and ♀ $2.00; 2 pairs, $3.00.

ENTOMOLOGICAL SUPPLIES.

Lantern Slides.
Boxes.
Cases.
Cabinets.
Forceps.
Pins. Nets.
Dissecting Instruments.
Museum Supplies.

New Illustrated Catalogue on Application

When Writing Please Mention "Entomological News."

P. C STOCKHAUSEN, PRINTER 58 N 7TH ST. PHILADELPHIA